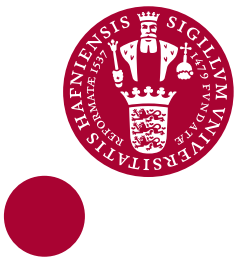

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Wright, Stuart Anthony Lewis

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Decision-Making in the European Water Framework Directive: the Potential Consequences of a Neoclassical Approach

By Stuart A. L. Wright[1]

Abstract

The paper focuses on the decision-making process in the EU Water Framework Directive (WFD). The WFD is an important piece of legislation, which will decide the quality of the EU aquatic environment for the foreseeable future. The main environmental goal of the Directive is good ecological status, to be achieved by 2015. The paper highlights the central role disproportionate cost analysis (DCA), the process by which member states can substantiate applications for derogation and less stringent environmental objectives, will play in determining the eventual quality of the EU aquatic environment. The paper draws attention to a potential development path, which the DCA process could take, based on an important guidance document on economics in the WFD (WATECO) and the AquaMoney project, a large neoclassical project established to produce guidelines for member states as to how to conduct DCA, essentially based on economic valuation methodologies, specifically contingent valuation and benefit transfer. The paper is critical of this potential approach based on a theoretical discussion, which concludes that deliberative approaches to decision-making appear to be more appropriate as they better fit the nature of environmental problems.
The second part of the paper is an analysis of the decision-making process in the WFD. The WFD both introduces economic methodologies and public participation for river basin management. The paper concludes that the use of neoclassical methods, such as contingent valuation, for DCA and the need in the WFD for public participation, represented by active involvement, are mutually exclusive and that the level of public participation advocated by the WATECO guidance document and the AquaMoney project fails to involve stakeholders *actively* in the decision-making process. The second conclusion is that the use of neoclassical methods for decision-making, such as CV and benefit transfer, will have consequences for the European aquatic environment in that it will result in the limited effectiveness of the Directive and the adoption of less stringent environmental objectives. Finally, the paper proposes an alternative decision-making process for the WFD based on a model of stakeholder participation.

Key words: Water framework directive, disproportionate cost analysis, decision-making, public participation, deliberative methods, contingent valuation, incommensurability, endogenous preferences.

1. The Neoclassical Approach to Environmental Decision-Making

When faced with policy options regarding the environment, society needs certain methodologies to be able to make decisions. The neoclassical approach to environmental decision-making involves monetary valuation, which can be seen as a manifestation of a utilitarian worldview, which assumes that nature is subservient to the needs and wants of human society. This is a fundamental axiom of western society but it has not been universally applicable to all cultures through history nor indeed do all individuals in present-day western society hold the view. The manner in which

[1] Copenhagen University, Faculty of Life Sciences, Department of Environment, Rolighedsvej 25, 1958 Frederiksberg C, Copenhagen, Denmark.
Centre for Ecological Economics and Water Policy Research, University of New England, Armidale, New South Wales, Australia.

decisions are made is central to the setting of goals for environmental policy. The way in which the nature of humans and the environment itself are understood is of fundamental importance and differences can radically alter the form of the resulting methodologies and hence policy recommendations. A particular methodology has to be consistent with the theoretical foundation adopted and the assumptions about reality, which it reflects (Crotty, 1998). Welfare theory forms the basis of neoclassical environmental economics and the manner in which the valuing agent is conceptualised is as a rational utility maximiser who has stable preferences. Both the type of rationality adopted and the individual preferences are assumed to be independent of the institutional context; that is they are taken to be exogenous (Vatn, 2005b).

Essentially, the understanding of behaviour has been extended from the market place by neoclassical environmental economists where it is applicable to private goods, whereby individuals act to satisfy their preferences within budget and production constraints, to the environment, a public good (Jacobs, 1997). Thus, neoclassical economics assumes that people hold a utilitarian view of the environment. Adopting a model of behaviour, which describes humans as individuals who maximize a particular utility function, who consistently adopt the rationality of the market place in their daily lives, logically leads to the selection of decision-making methodologies based on the commoditisation of the environment into discrete units such as fish or groundwater aquifers and their monetary valuation. This will allow people to effectively trade in the environmental resources, which are treated as ordinary consumption and production commodities, in order to maximise their individual utility. In the market place, consumers are assumed to know what is most beneficial for them, a concept known in economics as consumer sovereignty. Therefore, by applying the same concept to the environment, what is best for society (the social goals) are derived from aggregating the consumer preferences of individuals (van den Bergh *et al.*, 2000: Common and Stagl, 2005). The result is an efficient/optimal resource allocation and an equilibrium outcome, which is equated with being in the best interests of society. An important assumption in the preceding is that individuals follow a utilitarian philosophy with regards to the environment and are able and willing to consider tradeoffs in relation to the quantity and/or quality of environmental public goods (Spash *et al.*, 2006).

The theoretical assumptions in neoclassical economics about how the individual behaves and the nature of the environment logically leads to the application of the methodology of cost benefit analysis (CBA). According to neoclassical theory, the setting of goals regarding the environment necessitates the establishment of the total economic value (TEV) of environmental resources. However, the problem with environmental goods is that they have no price, as they are not traded, which tends to result in their overexploitation, a situation known as market failure. Therefore, market failure has to be corrected, which can be done by creating a simulated market through the use of CBA in order to establish the TEV of the environmental goods in question.

In environmental economics, TEV is composed of direct use, indirect-use and non-use values. Direct use value includes the physical utilisation of nature, such as logging but also in the form of recreational usage and the extraction of natural resources and groundwater (Bateman *et al.*, 2002). Indirect-use values take the form of environmental life-supporting functions, such as the assimilation of waste products and carbon fixation (Bateman *et al.*, 2002) but also include option value, which is the value that the individual attributes to the possibility of enjoying the natural good at a later point in time (Bateman *et al.*, 2002). Finally, non-use value is subdivided into

existence value, in which an individual experiences satisfaction from the knowledge of the mere existence of the natural good, due to a feeling of responsibility or duty to preserve species and ecosystems (Bateman *et al.*, 2002), and testamentary value, which originates from the individual's desire to preserve and protect natural goods out of concern for the opportunities of future generations (Bateman *et al.*, 2002).

Several methods of CBA have been developed to determine the economic value of environmental resources, however, only stated preference methods can deal with non-use values of environmental resources and so, in theory at least, these approaches can account for the TEV of the resource in question. Contingent valuation (CV) is a widely used stated preference method in which respondents to a survey are typically asked to state their willingness-to-pay (WTP) to preserve a particular environmental asset. The derived WTP of the respondent goes directly to the correct monetary measure of the change in utility derived from the change in environmental quality (Perman *et al.*, 2003). One of the main benefits of achieving good ecological status under the WFD will be an increase in biodiversity resulting from the improvement in habitats for species. Biodiversity is defined as a non-use value and therefore the CV method, based on stated preferences, can be expected to be used.

Regulatory agencies and financial institutions are faced by time and resource constraints. In response to this, benefit or value transfer is a technique, which has been developed in environmental economics to circumvent the need for costly and time-consuming original research to establish the value of particular environmental resources. The technique involves the transposition of monetary environmental values estimated through economic valuation methods from a former *study* site to a current *policy* site (Brouwer, 2000). Whilst an effort is made to apply previous research results to similar decision situations information is applied in a different socio-economic and environmental context.

As discussed, in neoclassical environmental economics, the environment is seen as a catalogue of goods providing specific waste disposal services or specific commodity-like inputs, whilst the valuing agent is assumed to hold a utilitarian perspective of the environment and is characterised as a rational utility maximiser whose preferences are stable and unaffected by the social context. This theoretical world-view logically leads to the use of CBA and monetary valuation when decisions are required regarding the environment. However, the neoclassical approach to decision-making is controversial and there is a vast and growing literature, which questions its efficacy. A proportion of the literature focuses on the fundamental assumptions of the neoclassical model; the question is how accurate is the neoclassical perspective of human nature and the environment, which underpins its methods?

2. Some Problems with the Neoclassical Approach to Decision-Making

There follows a brief discussion of selected aspects of the continuing controversial debate over the validity of monetary valuation. As one of the major benefits of achieving the WFD target of good ecological status in European waters will be an increase in biodiversity, a non-use good, it can be expected that a neoclassical approach to decision-making or goal setting will involve the use of stated preference methods, specifically contingent valuation (CV) and the technique of benefit transfer. Therefore, the discussion will focus on CV and benefit transfer and two dimensions of the critique of neoclassical methods, endogenous preferences and the incommensurability of values. These have been selected because they question the legitimacy of the neoclassical understanding of the nature of the valuing agent and the

environment upon which monetary valuation is based.

2.1 Stable preferences, Stable Constructs or Endogenous Preferences?

By way of testing the assumption that rationality and hence preferences are not influenced by social institutions, as asserted in neoclassical theory, Vatn (2005a; 2005b) refers to empirical studies from behavioural and experimental economics, which apply game theory (Gintis, 2000; Forsythe et al, 1994 quoted in Vatn, 2005a). In particular, the results of ultimatum, dictator and public goods games show that the behaviour of participants diverges from the neoclassical assumption of selfish behaviour, in that a significant proportion are willing to share and cooperate, implying that their actions have been governed by fairness and reciprocity. The behaviour of the participants is dependent on their own personal propensity for 'other-regarding behaviour' but also on the institutional context; the way in which particular games frame choices. For example, naming a public goods game 'Wall Street Game' or 'Community Game' influences the degree of participation even if the gains and losses are identical (Vatn, 2005a). Bowles (1998:87) reached a similar conclusion earlier, referring to the 'construal effects' of markets, whereby markets affect 'relational preferences' which appear to be held by people. The perceived relationships among exchanging parties, and related concepts of fairness, influences the terms on which people are willing to transact, as borne out in the above empirical studies. One of the main conclusions is that preferences are affected by context i.e. the institutional setting and are therefore endogenous, which runs contrary to the neoclassical position of context independent or exogenous preferences.
Dealing explicitly with decision-making in environmental policy, Vatn (2005a; 2005b) uses the term 'value articulating institutions' (VAIs) (after Jacobs, 1997) to define the range of methods used to capture the values people hold regarding the environment, which includes CBA, multi-criteria analysis and participatory processes. According to Vatn (2005b), VAIs define who shall participate and in which role. Therefore, in a CV study, respondents are supposed to act as consumers whilst in a participatory processes they are supposed to act as citizens on behalf of society (Vatn, 2005b). The use of CBA and CV influences respondents to adopt a utilitarian view of the environment and an individual utility maximising rationality, which in turn governs preferences, through directing respondents towards monetisation and trade-offs, whilst participatory methods such as the citizen's jury, influences respondents towards the adoption of a social rationality by facilitating a communicative process. Also, VAIs define what is considered relevant data and how data is to be handled. Vatn concludes that the CV method itself influences the preferences of respondents.

Veisten (2007) refers to work by ecological and institutional economists and other social scientists who he claims have based their critique of CBA and CV on the works of Amartya Sen. Sen (1979:1987) develops the idea that individuals behave in a self-interested way as consumers in the marketplace but may adopt other behaviour such as altruism when taking the role of, for example, a voter. Veisten (2007) continues that critics of CV assert that requiring respondents of CV to adopt the selfish role of consumer for decisions regarding the environment is morally dubious as the environment is a common good demanding respondents act as citizens to determine what is best for society. By way of negating this argument, Veisten makes the point that a complete schism between egoist behaviour in shops and altruist behaviour in social foras seems unrealistic, referring to green and ethical consumer markets, as an

example where the rationality adopted does not follow the logic of the institution. The complete schism to which Veisten refers is indeed unrealistic but more recent authors within institutional and ecological economics have developed this thread further concluding that institutions *influence* not *determine* the rationality adopted (Bowles, 1998; O'Neill and Spash, 2000; Bowles and Gintis, 2002; Vatn 2005a; 2005b). Whether or not a particular individual will act in accordance with the rationality fitting the institutional context also depends on his/her personal propensity to act in such a way. The institutional context is, however, still credited with playing a significant role in resulting behaviour, as supported by the empirical studies above. So recent research has evolved from the dichotomous representation of *homo economicus* acting in the market and *homo politicus* acting in social forums to a more subtle and realistic interpretation.

The manner in which the environment is conceptualized is a central determining factor for which decision-making methodologies becomes appropriate. Institutional and ecological economists (Common and Perrings, 1992; Vatn and Bromley 1994; Bromley, 2005; Common and Stagl, 2005) describe a complex environment-society system in which people are linked together through their acts, which impact on the environment due to biological and physical processes. Thus, releasing wastewater into a lake may result in a decline in biodiversity, which can affect others in a variety of ways from recreational impacts, such as a reduced possibility for fishing, to reducing the resilience of the aquatic environment entailing more significant consequences. Therefore, the preferences of one influence the opportunities of another (Bowles, 1998; Vatn, 2005a). Due to these interlinkages between species, ecosystem processes and humans, and between humans and other humans, authors (for example: Vatn, 2004; 2005a; 2005b) define the environment as a *common* good, rather than as a *public* good as in neoclassical economics. This is in recognition of the fundamentally ethical nature of choices about the environment, as the choices and subsequent actions of individuals concerning the valuation and use of goods such as biodiversity, has an impact on the quality of the environment that is left for others including the extent to which they are exposed to future risks. Thus, a social interconnectedness is imposed on humans as a result of the linkages existing in nature (Vatn, 2004).
Therefore, decisions regarding the environment are primarily seen in terms of resolving contested choices or conflicts (VALSE, 1998; Anand, 2000; Vatn, 2004; 2005a; 2005b; O'Neill, 2007). However, the CV methodology has no scope for respondents to consider the consequences of their individual environment choices for others as it frames the issue in terms of what the change in environmental quality is worth to the individual. The inherent interlinkages between individuals are disguised. As Bowles (1998:105) puts it, "The influence of our preferences on others is not even approximately captured by contracts." This illustrates how the efficient solution derived from the aggregation of individual WTP bids does not necessarily result in a socially optimal outcome and thus the relevance of economic efficiency as a societal goal is brought into serious question.

An example of the manner in which a CV survey encourages strategic behaviour is provided by a recent study (Olsen *et al.*, 2005). The Motorways versus Nature CBA concerned two potential motorway layouts in the Silkeborg area of Jutland, Denmark. The one, which was chosen, would join together two existing stretches of motorway. The first proposal was the Resendal layout, north of Silkeborg, whilst the second was the Ringvej layout, through Silkeborg town itself. The aim of the CV study was to

ascertain the preferred motorway layout by eliciting WTP valuations from respondents within the affected population. When asked what their preferred location for the Silkeborg motorway would be, a number of the respondents to the questionnaire were motivated, not by a consideration of the relative environmental impacts of the two choices, but by a concern that the motorway should 'not be in my back yard' (Hence the term NIMBY, which was coined to describe such a phenomenon). Therefore, a number of respondents, who were based within Silkeborg itself, revealed a WTP for the motorway to be built through the conservation areas, simply because then it would be as far away as possible from their homes. Conversely, a percentage of those located outside Silkeborg, and closer to the proposed route through the Sminge and Gødvad areas, revealed a WTP for the motorway to be constructed through Silkeborg town itself, for the same reasons (Olsen *et al.*, 2005). This provides a clear example of an instance in which relying on personal preferences can provide an outcome, which does not appear to be in the best interests of society as a whole. From an institutional perspective such an outcome is perhaps unsurprising as the CV format fosters strategic behaviour. Because choices are interlinked, what is individually rational, or sensible to do, may in such situations be collectively detrimental (Vatn, 2005b).
In response, authors (Røpke, 1999; O'Neill and Spash, 2000; Vatn, 2005a; 2005b, O'Neill, 2007) recommend deliberative decision-making methods for the setting of goals regarding the environment, which support social rationality and influence participants to assume the role of citizens in a process of communication over what is right to do.

2.2 Lexicographic Preferences, Plural Values and Incommensurability

"(Neoclassical) Environmental valuation rests on the idea that benefits and costs can be expressed in terms of money and hence made comparable and commensurable" (Aldred, 2006:141). However, many authors discuss values regarding the environment as being plural and incommensurable (see for example: O'Neill, 1998; O'Connor *et al.*, 1998; Martinez-Alier *et al.*, 1998; Røpke, 1999; van den Bergh *et al.*, 2000; De Marchi and Ravetz, 2001; Vatn, 2004, 2005a, 2005b; Aldred, 2006; Trainor, 2006; O'Neill, 2007; Farrell, *In press*) in that the value of the environment cannot be measured in terms of the single metric of money, or indeed any other metric. An example of how people hold values other than exchange values when it comes to the environment is provided by the occurrence of lexicographic preferences, which are linked to deontological ethical views or a rights-based approach to the environment (Spash, 1997). Such respondents reject the implicit trade-offs required in CV studies in relation to the quantity or quality of public goods (Spash, 2006). This can be due to a belief in the rights of species or ecosystems to existence or be protected from harm. For these individuals, engaging in a process that places monetary values on certain aspects of nature may violate their ethical position. Spash (2000) proposes a modified form of lexicographic preferences suggesting that individuals first need to secure a minimum standard of living before being prepared to defend the environment, which is perhaps a more realistic interpretation of the position.
The assumption of neoclassical economics, however, is that individuals adopt a utilitarian view of the environment (Spash, 1997), as being composed of discrete units, such as fish or trees, which can be traded just like private goods in the market place. Hence in neoclassical theory, the sole form of environmental value is exchange value as represented by money.

The valuation of biodiversity has received particular attention in the literature with reference to lexicographic preferences (Spash and Hanley, 1995, Spash, 2002; Vatn, 2004; Spash *et al.,* 2006; Veisten *et al.,* 2006). According to neoclassical theory, biodiversity represents a non-use value, which requires the use of stated preference methods. Thus CV essentially requires respondents to buy and sell improvements in biodiversity (Spash *et al.*, 2006), which is a situation in which lexicographic preferences are likely to occur due to the belief of certain individuals that species have a right to existence. Such individuals will then reject the commodification of environmental resources (Spash *et al.*, 2006).

Thus respondents with rights-based views often protest against the valuation procedure by not responding, stating a zero bid or providing an outlier bid. The accepted way of dealing with such responses in the CV literature is to discard them, as they are assumed to either demonstrate that the individual confers no value on the environment or is irrational. Consequently, authors (Sagoff, 1988; Spash, 1997) have labeled the CV method undemocratic as respondents rejecting monetary valuation due to a rights-based approach are excluded from the process and are in effect disenfranchised.

Recent research (Spash *et al.*, 2006) appears to contradict the long-standing assumption that respondents who hold a rights-based perspective of the environment will reject the CV survey outright rather than take part in the process and provide a WTP bid. Results from the study indicate that approximately 43% of respondents provided a WTP bid on the basis of non-economic reasoning (Spash *et al.*, 2006). This apparent anomaly is explained by the fact that respondents tend to want to cooperate with CV researchers. Such an explanation of the behaviour mirrors the work done by several authors (Bowles, 1998; Vatn 2005a; 2005b), which confers a degree of influence to the institutional context on the rationality and hence preferences of individuals i.e. that they are endogenous rather than being exogenous as espoused by neoclassical theory.

Veisten (2007:219) refers to studies on biodiversity (Spash and Hanley, 1995; Stevens et al 1991), which have reported lexicographic motivated responses of approximately 25%, a level which he considers to be potentially problematic, especially due to a systematic upward or downward bias due to ethicists' misrepresented preferences but also on moral grounds whilst he further acknowledges that it might undermine the validity of the CV in its primal application.

Veisten *et al.* (2006) conduct tests of inconsistent attitudes to estimate the maximum share of strict lexicographic preferences for biodiversity. The results of the study indicated that there were 'very few' respondents who showed a clear reluctance to trade-off biodiversity with other goods. Veisten (2007) then concludes that 'die hard' lexicographic ethicists may be considerably less than a quarter. Even if the percentage of respondents with true lexicographic preferences is significantly less than a quarter as claimed, such preferences are incompatible with the economic theory upon which CV is founded, as acknowledged by Veisten *et al.* (2006). Therefore, it must still raise serious doubts about the democratic legitimacy of the method and the validity of its results, as such individuals do exist.

Due to this apparent inability of the CV method to incorporate the views of rights-based individuals, it appears unavoidable that the monetary values collected will fail to represent the broader values individuals associate with the environment and by assuming respondents hold a utilitarian view of the environment the motives that lie behind responses will be misinterpreted (Spash, 2000a). Thus, monetary valuation results in significant information loss. The implication is that this will have a

delegitimising effect on environmental policy, which is implemented on the basis of the results of such a CV study. This conclusion is supported by a study by Clark *et al.* (2000), which revealed that respondents to a CV study did not understand the reasoning behind the WTP elicitation procedure. When they were later told that the data were to be used in a CBA to support environmental decisions many felt deceived. Incommensurability of environmental values is used as a basis for asserting that environmental problems represent a boundary to the market institution due to the moral and ethical status attributed to the environment. Hence the environment should not be treated as a commodity open for exchange in markets due to the failure of CBA to account for ethical and moral values held by some individuals, which renders monetary valuation morally dubious, much in the same way as there is broad consensus that market boundaries should exist concerning trading in children, certain drugs or weapons of mass destruction (Aldred, 2006). The environment is composed of objects of moral concern and is thus more than just economic resources (O'Neill and Spash, 2000; O'Neill, 2007).

An additional argument for why the environment should represent a boundary for the market in terms of decision-making methodologies focuses on the complex nature of the environment itself. Vatn and Bromley (1994) claim that a commodity must be precisely demarcatable before it can be valued. However, environmental goods, as identified by economics, are in fact components within larger ecosystems characterised by a web of functional relations, which makes their division into discrete units impossible, biodiversity being a case in point.

Martinez-Alier *et al.* (1998), emphasise that plural values regarding the environment are *incommensurable* but are not *incomparable*. Rather they are represented by weak comparability in that the conflicts that characterise the environment are unavoidable but are compatible with rational choice employing practical judgement. Practical judgment can be operationalised with the use of deliberative decision-making methods.

A further method of monetary valuation, which is becoming increasingly popular, is the technique of benefit or value transfer. According to Brouwer (2000:137), the technique is controversial because of reservations amongst academics and politicians regarding the usefulness and technical feasibility of economic valuation tools to demonstrate the importance of environmental values in project or programme appraisals. Brookshire and Neill (1992) stress that an inextricable relationship between non-market benefit estimation and benefit transfer techniques exists in that benefit transfers can only be as accurate as the initial benefit estimates. Therefore, the discussion in the previous section, which questions the validity of the CBA methodology, is also applicable to benefit transfer as the technique is based on the same underlying theoretical assumptions regarding the nature of the valuing agent and the environment.

Spash and Vatn (2006:383) focus on the issue of plural values representing "social and moral commitments of a non-consequentialist and non-utilitarian kind" as a motivation for WTP bids in primary valuation studies and how such motivations are context dependent. In other words, the 'value' of the environment is dependent on the stakeholders who feel attached to the particular area in focus. Changing the location of an environmental resource will place it in a different cultural milieu populated by a society who will attribute different values to the specific resource derived from their distinguishing character, sentiments, moral nature or guiding beliefs, in short their *ethos*. Context dependency also relates to the bio-chemical characteristics of specific environmental features. For example, a lake at one location, rather than being a

discrete demarcatable commodity, is a part of a larger aquatic ecosystem to which it is connected in complex ways, performing various functions including waste assimilation and providing a habitat for species. To say that one lake performs exactly the same functional role as another lake in a different country at a different time seems untenable, regardless of any superficial similarities they may share such as size, recreational usage etc. It seems unavoidable that benefit transfer will result in significant information loss regarding value due to incommensurability. Taking values from one biophysical, economic, temporal and spatial situation and transferring them to another will only result in the generation of "theoretically meaningless numbers" to borrow a phrase from Spash and Vatn (2006:387).

3. Summary

It appears that the manner in which neoclassical economics understands the nature of the valuing agent and the environment is only a partial understanding in the case of the valuing agent and is incorrect in the case of the environment. A more complete understanding of the valuing agent acknowledges that not all humans hold a utilitarian perspective of the environment, that humans are multi-rational with certain individuals being more inclined towards selfish behaviour than others, whilst rationality and hence preferences are influenced by the institutional context. Meanwhile the environment is not composed of a series of commodity-like resources, which are demarcatable. Rather the environment is better conceived as a complex system of interlinked processes. Monetary valuation, which is based on the neoclassical worldview, doesn't fit the reality of the decision-making process due to a reductionist perspective of human nature and the environment.

The previous discussion has questioned the validity of neoclassical value articulating institutions. Values, such as moral and ethical judgments or ecological functions, have been identified as being incommensurable and are thus irreducible. By forcing a utilitarian ethic onto respondents to CV surveys and reducing information to monetary figures, the method leads to a significant loss of information. This is likely to be even more pronounced in the case of benefit transfer, which ignores the central role context plays in the determination of value, both on the part of the 'valuer' and the object to be valued. The consequence of this information loss is the misrepresentation of ethical values as utilitarian and the disenfranchisement of respondents, who reject the commodification of the environment. This can undermine the legitimacy of subsequent policy based on CV studies. The preceding discussion challenges the concept of economic efficiency as a guide to environmental policy.

Deliberative decision-making methods allow individuals to articulate ethical perspectives, which would be discarded or misrepresented in a CV study, and thus have the potential to address the problems of legitimacy connected with monetary valuation. The conceptualisation of an environment-society system logically favours deliberative decision-making methods that make the relationships between individuals explicit. Protest bids and the general controversy surrounding monetary valuation raises doubts over the appropriateness of asking individuals how much the environment is worth to them personally, as the consequences of individual choice fall not only on the individual, but on others as well. Such a situation seems to require the question "What ought society to do?" (VALSE, 1998). Also, If preferences are endogenous then the preferences of participants in deliberative methods can change through a process of communication and reasoned argument with fellow participants, whilst preference endogeneity suggests that the deliberative forum itself will

influence the rationality adopted by participants, supporting social rationality, or citizen behaviour. It seems useful to imagine what might have happened if a deliberative method, such as a citizen's jury, had been used to decide the preferred motorway layout around Silkeborg instead of the CBA study that was undertaken. In such circumstances, those respondents who were motivated by a desire to locate the motorway as far away as possible from their homes would, as participants, have had to openly discuss their motivations with others or attempt to disguise them. Attempts to disguise strategic behaviour are difficult in a communicative arena, as these participants would have to invent alternative reasons for their choice, which would probably appear implausible to fellow participants.
Of course, deliberative forms of decision-making come with their own set of problems (see VALSE, 1998; O'Neill and Spash, 2000; De Marchi and Ravetz, 2001; O'Neill, 2007) but the method appears to fit the nature of environmental problems better.

4. Section 2: Decision-making in the WFD

The next section will be concerned with an analysis of the EU Water Framework Directive (WFD) to determine whether recent research findings, which question monetary valuation, have 'trickled down' to inform European policy. Initially, the focus will be on the broad measures contained within the WFD to establish the extent to which they reflect the more complete interpretation of the nature of the valuing agent and the environment, as discussed above. The core of the analysis is concerned with the decision-making methods used by member states to establish whether the costs of achieving the environmental target within the Directive are disproportionately costly, as a justification for derogation and less stringent environmental objectives.
Finally, an alternative model of stakeholder participation for decision-making in the WFD is suggested on the basis of the perceived advantages to be gained from a participatory approach resulting from its foundation on a more complete theoretical understanding of the nature of the valuing agent and the environment.

4.1 The Ecological Economics of the WFD

The WFD (2000/60/EC) was adopted in 2000 and has been described as an ambitious holistic reorganization of EU water policy (Fyns Amt, 2003). The Directive is the most substantial piece of water legislation ever produced by the European Commission, and will ultimately set common approaches and goals for the management of water in 27 countries, providing the major driver for achieving sustainable management of water in the EU for many years to come. The Directive introduces the main environmental objective of good ecological status (GES), which is to be achieved by 2015, and requires member states to introduce river basin management based on the natural geographical and hydrological unit. Member states must prepare river basin management plans for each basin containing implementable measures to achieve GES. A draft plan must be produced by 2008 whilst the final version is to be implemented by 2009 with plans thereafter being updated every 6 years.
Aspects of the WFD reflect concepts which would by advocated by ecological economists, regardless of whether this was intended or not. The interpretation of ecological economics in the following brief discussion is in line with the subdivision of the field that questions the dominant paradigm of neoclassical economics. A recent

development in the field of ecological economics has been an increase in studies using traditional neoclassical methodologies, such as cost-benefit analysis, as evidenced by reference to the International Journal of Ecological Economics (Røpke, 2005).

The environmental target of GES is one, which has not been decided through an economic process in order to find the optimal level of pollution. Rather it is one that attempts to establish a baseline for an undisturbed ecosystem. One of the major benefits of achieving GES will be an increase in biodiversity, which has been identified as being central to the protection of ecosystem resilience, as the diverse gene pools act as a form of insurance against ecosystem collapse, and a sudden loss of biological productivity and reduced capacity to support human life, by increasing the capacity for adaptation to stresses and the maintenance of the ecosystem's organisational and functional structure (Holling *et al.*, 1995). The UN Convention on Biological Diversity (2003) identified the ecosystem level as being the appropriate basis for describing biodiversity. This is reflected in the WFD, which introduces river basin management, requiring in many cases new administrative structures to be established based on the scale of the entire ecosystem instead of traditional administrative borders. Thus, a systems approach is required in which each river basin (the ecosystem) determines the boundaries of the socio-economic system that is to become sustainable. In effect, GES places a constraint on economic activity, which should be adjusted so as to ensure the resilience of the aquatic ecosystem. However, in cases where achieving GES would result in 'disproportionate costs' there are opportunities for derogations including less stringent environmental objectives. Ecological economists would stress the importance of maintaining the resilience of aquatic ecosystems, due to the vital role they play in supporting society, and thus might underline the significance of achieving GES. However, it is unrealistic to expect that GES can be realised in all water bodies. It is also unclear whether it is necessary to achieve GES in all water bodies to ensure the resilience of the aquatic environment. Furthermore, making GES the overriding aim could compromise other important societal aims, such as ensuring a minimum standard of living, for example. So the option of applying for derogation enables a balance to be struck between environmental, economic and social goals. This then serves to highlight the central role the methodology that is used to provide evidence for derogations will play in striking this balance and deciding the eventual status of the European aquatic environment.

Furthermore, the WFD requires that member states encourage the active involvement of all interested parties in the implementation of the Directive, in particular the production, review and updating of the river basin management plans. This reflects the importance attributed to public participation in the Fifth Action Programme on the environment (European Commission, 1993), in which it is identified as being the *conditio sine qua non* for the realisation of sustainable development. Thus, the participation of the public is seen as being a key process for sustainable water management. Functowicz and Ravetz (1993:744) have highlighted the expediency of involving an extended peer community in an age of post-normal science in which "facts are uncertain, values in dispute, stakes high and decisions urgent" as an effective problem-solving strategy for global environmental risks.

Finally, the WFD fully institutionalises economic approaches to water resources management in the EU. The introduction of economic instruments is required, such as full cost water pricing to include resource and environmental costs and instruments, such as taxes on nitrogen inputs to agriculture, are options for the programme of

measures in river basin management plans to realise GES. These instruments can contribute to the sustainable management of scarce resources by encouraging more rational use of water due to its increased economic value. They can be in accordance with ecological economics, assuming some conditions are met, i.e. taxes should be based on a standards and pricing procedure as opposed to deriving the tax rate from the optimal level of pollution (Common and Stagl, 2005).
Therefore, the WFD appears to contain concepts, which would be advocated by ecological economics. However, the manner in which disproportionate cost analysis (DCA) will be conducted, as a basis for establishing whether the programme of measures to achieve GES is disproportionately expensive, in order to support an application for derogation, including less stringent objectives, could see a departure from ecological economics.

4.2 The Recommended Approach to Goal-Setting in the WFD

In order to achieve the goal of GES, a river basin management plan (RBMP) must be compiled for each river basin district in the member state. Each RBMP should contain a programme of measures, detailing how GES will be achieved. A variety of possible measures are open to member states. Some examples include wetland restoration, water metering, water efficiency projects, the creation of semi-natural habitats, the extensification of farming practices and input taxes on farming chemicals (WWF, 2006). Economic assessment will then play a crucial role in contributing to the choice of which of a range of possible measures should be included in the RBMPs (WWF, 2006:7). The range of measures available in each river basin will first be subject to a cost-effectiveness analysis (CEA) in order to select which measure, or combination of measures, would achieve GES at least cost. This will be followed by disproportionate cost analysis, which will be conducted to assess whether the proposed measures, which would achieve GES at least cost, are too costly. Article 4 of the WFD (CEC, 2000) permits member states to apply for various derogations on the basis of a DCA. DCA can be used on the following four occasions.

- **Designating heavily modified water bodies**. A water body may be designated as heavily modified when the beneficial objectives served by the modified characteristics cannot be met by alternative means that are not *disproportionately costly* (*Article 4.3*).
- **Extended deadlines**. The deadline for achievement of GES can be extended from 2015 for up to two further updates of the RBMP i.e. until 2021 or 2027. This is permitted if the realization of GES by 2015 would be *disproportionately expensive* (*Article 4.4*)
- **Less stringent environmental objectives**. These can be pursued if the achievement of GES would be *disproportionately expensive* even with an extended deadline (*Article 4.5*).
- **New Modifications**. New modifications that cause status deterioration are permitted when the beneficial objectives served by the new modification cannot be met by alternative means that are not *disproportionately costly* (*Article 4.7*). (Such new modifications must also satisfy a series of further conditions, including that they be of overriding public interest, and 'sustainable').

Thus, it is quite clear that DCA will play a central role in determining the extent to

which significant improvements in the European aquatic environment will be achieved.

4.3 What is DCA?

The above raises the question of when do costs become disproportionate? Disproportionality is an ambiguous concept, which could be decided in a variety of ways. Indeed, the precise method by which member states should determine disproportionality is not specified in the WFD. Thus, it could be expected that mainstream approaches will dominate. This together with other ambiguous terms in the Directive and the lack of a statutory requirement to achieve GES enables member states to avoid the status objectives without any legal implications, although member states have an enforceable obligation to prevent any further deterioration in water quality (Kallis and Butler, 2001). A neoclassical approach to disproportionality would identify it as being the point where monetary costs exceed monetary benefits, which can be calculated by cost-benefit analysis (CBA). Such a process would require that the environment be valued in monetary terms, specifically the increase in water quality, and all the ensuing benefits that that would entail, such as increased biodiversity, resulting from the realisation of GES. Such a procedure would require use of the CV method to capture the non-use value of biodiversity.
The common implementation strategy for the WFD has produced a guidance document on economics and the environment for member states, which provides general guidelines for member states on how to conduct DCA (WATECO, 2003). This document advises against the use of CBA to determine disproportionality by stating that disproportionality is ultimately a political judgment informed by economic information and that disproportionality should not begin at the point where measured costs simply exceed quantifiable benefits due to the uncertainty of estimates of costs and benefits (WATECO, 2003). Furthermore, according to WATECO (2003), the assessment of costs and benefits will have to include qualitative costs and benefits as well as quantitative.

4.4 The AquaMoney Project

There follows an examination of the AquaMoney project by way of drawing attention to the possible manner in which disproportionality may come to be determined by member states seeking to apply for derogations to the environmental objectives of the WFD.
The AquaMoney project consists of a consortium of 16 leading European research institutions supported by an advisory committee of 24 stakeholders and decision-makers. The rationale for the project is to develop and test practical guidelines for the assessment of environmental and resource costs and benefits in the WFD due to the perception that these concepts play a central role in the economic analysis of the WFD, in particular (and with specific relevance to this study) for the decisions on exemptions on grounds of disproportionate costs (Article 4) (Aquamoney). The practical guidelines will facilitate the creation of a common valuation design to be applied across 10 European pilot river basins, which will facilitate investigations into techniques for transferring economic values for environmental and resource costs and benefits across water bodies and between rivers. According to the AquaMoney website (AquaMoney), special attention will be given to the production of lists of transfer values for the different goods and services provided by aquatic ecosystems

and environmental damage categories associated with different types of water use. This is ostensibly to develop practice-oriented guidelines on how to assess environmental and resource costs and benefits in a quick and reliable way, with particular focus on the transfer of economic values of environmental and resource costs and benefits from water body level to national and international river basin level and vice versa (AquaMoney). Reference to the Danube case study of the AquaMoney project provides an example of the approach advocated by the project to operationalise DCA as a basis for possible derogations under Article 4 of the WFD. The case study maintains that the main objective of the monetary valuation exercise will be to perform a cost-benefit analysis of the WFD programme of measures to underpin possible derogation (AquaMoney). The economic valuation methods proposed are contingent valuation for the assessment of non-use values and travel cost for use-values, whilst the benefit transfer technique is highlighted as being a key methodological issue.

From the previous description it is quite clear that the theoretical foundation of the project is neoclassical environmental economics with its reliance on monetary valuation to inform decisions regarding the environment.

It is, of course, not possible to predict how widespread the techniques advocated and developed by the AquaMoney project for assessing disproportionality will become in the EU. However, considering the scale of the project, the number of participating institutions, supporting stakeholders and decision-makers coupled with the fact that the guidelines will be tested by carrying out economic valuation case studies in 10 different European river basins including the Rhine and the Danube, it seems reasonable to suggest that it can be expected that the guidelines will be used to establish disproportionality in river basins in the EU.

Therefore, the DCA process to support applications for derogation, including less stringent environmental objectives, could well be based on economic efficiency.

4.5 The Decision-making Process in the WFD

Funtowicz and Ravetz (1993:750) claim that the extension of the peer community is required in an age of post normal science, which occurs when "Uncertainties are either of the epistemological or ethical kind, or when decision stakes reflect conflicting purposes among stakeholders." River basin management fits this situation and thus warrants the extension of the peer community to include stakeholders to discuss what level of water quality is desirable and what measures are acceptable to achieve it. Recent years have witnessed a growing acknowledgement of the synergistic effects to be harnessed from involving stakeholders in decisions, which are of direct consequence to them. With regards to water management, the advantages were recognized at a relatively early stage and articulated by principle no.2 of the Dublin Statement (UN, 1992) thus,

> *"Water development and management should be based on a participatory approach, involving users, planners and policy-makers at all levels…. It (public participation) means that decisions are taken at the lowest appropriate level, (subsidiarity) with full public consultation and involvement of users in the planning and implementation of water projects."*

With general relevance to the environment, the Aarhus Convention (1998) states that, "in the field of the environment improved access to information and public participation in decision-making enhance the quality and implementation of decisions" (EC 1998:2). From its earlier inclusion in strategic documents public participation has become directly included in policy, the case in point being the WFD. Within the WFD, the *active* involvement of the public is encouraged. Indeed, *active* public involvement has been identified as being most likely the key to success with regards to achieving the desired water quality objectives (Common Implementation Strategy, 2003).

However, it seems that contradictory approaches to water management are emerging within the WFD between the need for active public participation, involving an increased democratic process, on the one hand, and economic decision-making, involving a closed technocratic process, on the other. It is the opinion of this paper that the two are mutually exclusive. This development could be attributed to the vagueness of the Directive and the lack of obligations for member states to adopt specific methods. An explanation for this could be the manner in which the WFD was created over a period of 5 years, finally requiring a conciliation process between the Council of Ministers, representing member states, and the strongly pro-environment European Parliament (Kallis and Butler, 2001; Kaika and Page, 2003), the result being compromise between two bodies with substantial differences in position.

Arnstein's ladder of participation (1971) provides a categorisation of levels of public participation ranging from manipulation to full citizen control as illustrated in Figure 1, below.

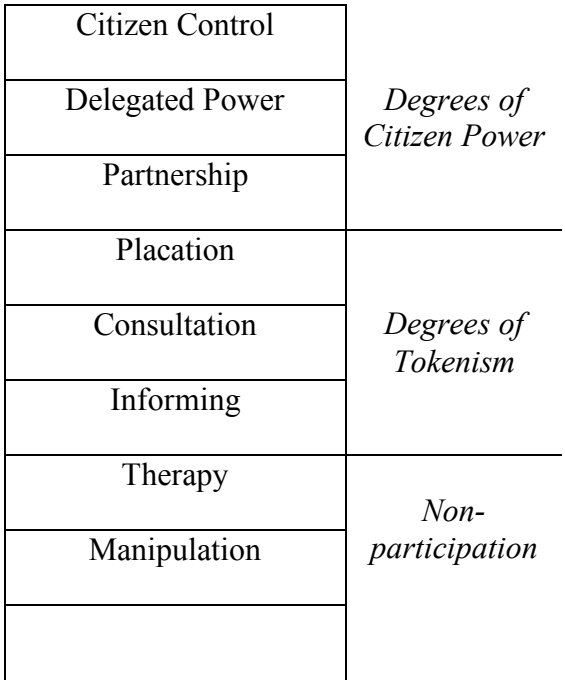

Figure 1. *Eight rungs of the ladder of citizen participation* (Source: Arnstein, 1971)

The advantages that are to be gained from public participation can only be realised if a certain amount of control is given to stakeholders, from the level partnership and upwards. Public participation can be interpreted in several ways. The Public Participation Working Group for the WFD (2003) defines it as "allowing people to

influence the outcome of plans and working processes" and like Arnstein distinguishes levels of participation, which should build on each other from information supply to consultation and finally active involvement. Information supply refers to providing access to the general public to background information. Consultation relates to the public having the right to react to plans and proposals developed by the authorities, while active involvement refers to *stakeholders actively* participating in the planning process by discussing issues and contributing to their solution (Public Participation Working Group, 2003).
However, what is being proposed by WATECO, and the manner in which the decision-making process is developing according to the AquaMoney project, points towards a procedure dominated by economic analysis. The decision-making process proposed by WATECO for river basin management plans is illustrated in Figure 2 below, (adapted from WATECO, 2003 and WWF, 2006).

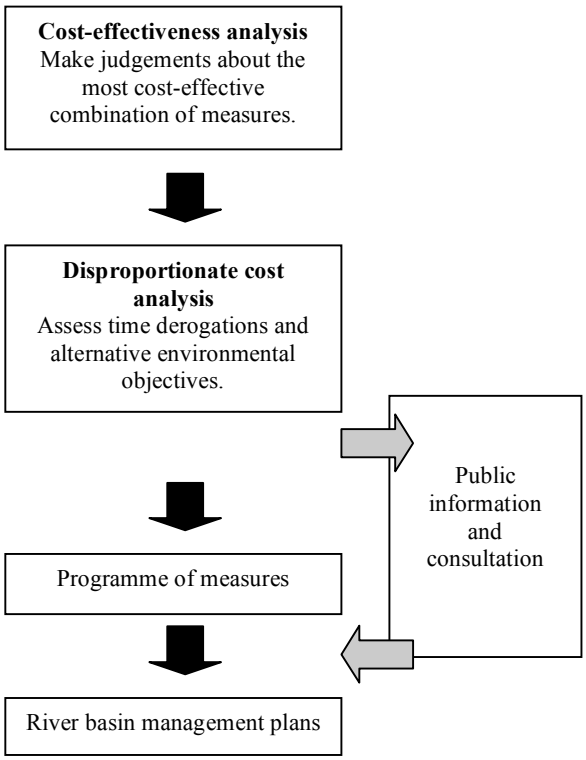

Figure 2. *The Economic Decision-Making process for the Selection of Measures in River Basin Management Plans* (Adapted from WATECO, 2003 and WWF, 2006).

Initially, cost-effectiveness analysis will be used to select which measures are able to achieve GES at the lowest cost. Achieving GES at the lowest economic cost is in itself a worthy objective; in a world of scarce resources governments and voters don't want to spend more money than is necessary. However, the CEA methodology determines which measures can achieve the target at the least cost per unit of reduction but such measures can have side effects, which may be environmental and social. Thus, CEA effectively filters out potential options at an early stage as the economic aspect of measures takes precedence over other considerations. For example, a CEA may establish that GES can be realised at least cost in a particular

river basin by constructing a water treatment plant. Nevertheless, these plants have other environmental side effects, such as greenhouse gas emissions derived from intensive energy use thereby contributing to global warming and sea level rise essentially exacerbating the original problem. Such plants represent an end-of-pipe engineering solution, which treats the symptoms of aquatic pollution not the cause, which would entail preventing pollution from diffuse sources. It is therefore questionable whether such a solution is sustainable. Environmental side effects should be included in the costs of measures but this demands that environmental costs are monetarised and thus CEA is essentially a constrained form of CBA and will face many of the same problems (Spash, 2000b). The decision regarding the initial selection of potential measures to achieve GES should be about what measure or combination of measures can achieve GES at the *lowest acceptable* cost all side effects considered *qualitatively*. Thus, the cheapest measure may be rejected due to unacceptable social and/or environmental side effects. This indicates that stakeholders should also be *actively* involved in the process of selection, as they bear the direct consequences of selections.

Figure 2 vividly depicts the subsidiary role of public participation, as informing and consultation. Whilst this level of participation allows stakeholders to hear and be heard, they lack real power or influence to ensure that their views are heeded by the powerful (Arnstein, 1971). Furthermore, informing and consultation is clearly to be introduced at a late stage of the planning process, essentially after decisions have been taken. The introduction of this restricted form of public participation *ex post* will result in stakeholders having limited opportunity to influence the programme of measures for their benefit. Thus, it appears that the level of public participation advocated by WATECO amounts to informing and consultation, (defined as degrees of tokenism according to Arnstein's ladder of participation (Arnstein, 1971).

Whilst the WATECO guidance document (2003) explicitly states that DCA should not be operationalised by CBA, the AquaMoney project is focused on precisely this and ultimately on the production of 'price lists' for water resources, thereby taking the commoditisation of the environment to the extreme. Birol *et al.* (2006) refer to the central role of public participation in the WFD and consider the use of CV and other economic valuation techniques as being a way to incorporate public participation into decision-making processes. However, it is considered that the involvement of an individual in a CV study amounts to a very restricted form of public participation and certainly falls short of the active involvement which has been identified as being central to the success of the Directive. Active involvement is blocked by the CV format due to the incommensurability of environmental values and the scope for misunderstanding the purpose of the survey and the lack of scope of the method to give a voice to respondents who reject the strict utilitarian approach to the environment on ethical grounds. Furthermore, the CV format provides no forum for stakeholders to discuss issues or contribute to their solutions, which is required if active involvement is to be realised (Public Participation Working Group, 2003). Furthermore, according to Brouwer (AquaMoney, 2006), the public should be informed *after* the valuation process to notify them of the outcome of the economic analysis and to explain the findings of valuation studies through public hearings or meetings with local community leaders. Therefore, consulting and informing the public *ex post* exacerbates the problems inherent in using an economic approach to decision-making.

The WATECO guidance document and the AquaMoney project are advocating the imposition of a utilitarian perspective on decisions regarding the aquatic environment

across the EU, which will soon encompass 27 countries. However, the preceding theoretical discussion rejects the assumption of a universal utilitarian epistemology. Both the WATECO guidance document and the AquaMoney project involve limited public participation and fall short of the desired *active* involvement. Such a process will be ineffective at drawing out the potential benefits to be had from public participation. Indeed, the use of CV and benefit transfer for decision-making as advocated by the AquaMoney project could have the opposite effect in that it could result in the disenfranchisement of stakeholders rejecting the commoditisation of the environment and the disillusionment of stakeholders regarding policies decided in river basins on the basis of what is essentially a top-down, closed technocratic approach. Thus, it is considered that the application of neoclassical decision-making methods will result in the limited implementation of the WFD. Due to the inappropriateness of the economic approach it is considered that the entire decision-making process from deciding appropriate measures to deciding whether measures are disproportionately costly in river basins should be opened up to active stakeholder deliberation, moving public participation from the periphery to the centre of the decision-making process to create a multi-dimensional, multi-stakeholder participatory approach.

Stakeholders could then decide whether GES should be achieved in their river basin based on a balanced assessment of the costs of measures; costs here meant in a broader sense to include economic, social and environmental. Such a process would see economic *decision-making methods* essentially removed from the WFD and river basin management. Economic methods would be restricted to the initial economic analysis of the river basin and for compiling information on the economic costs of various measures for achieving GES. Such quantitative financial costs would only represent one aspect of the broader costs including social, environmental and cultural to be considered by stakeholders assessing measures and disproportionality. The steps involved in the proposed model of stakeholder participation for decision-making in the WFD are illustrated in Figure 3 below.

Stakeholder deliberation could be operationalised through the use of deliberative decision-making methods, such as citizen's juries, thereby instilling *active* stakeholder involvement in the planning process and imparting a degree of citizen power on participants, as recommended by the Public Participation Working Group (2003). This appears to be a more suitable method for handling the conflicts of interest and incommensurability of values, which characterise water resource use in river basins.

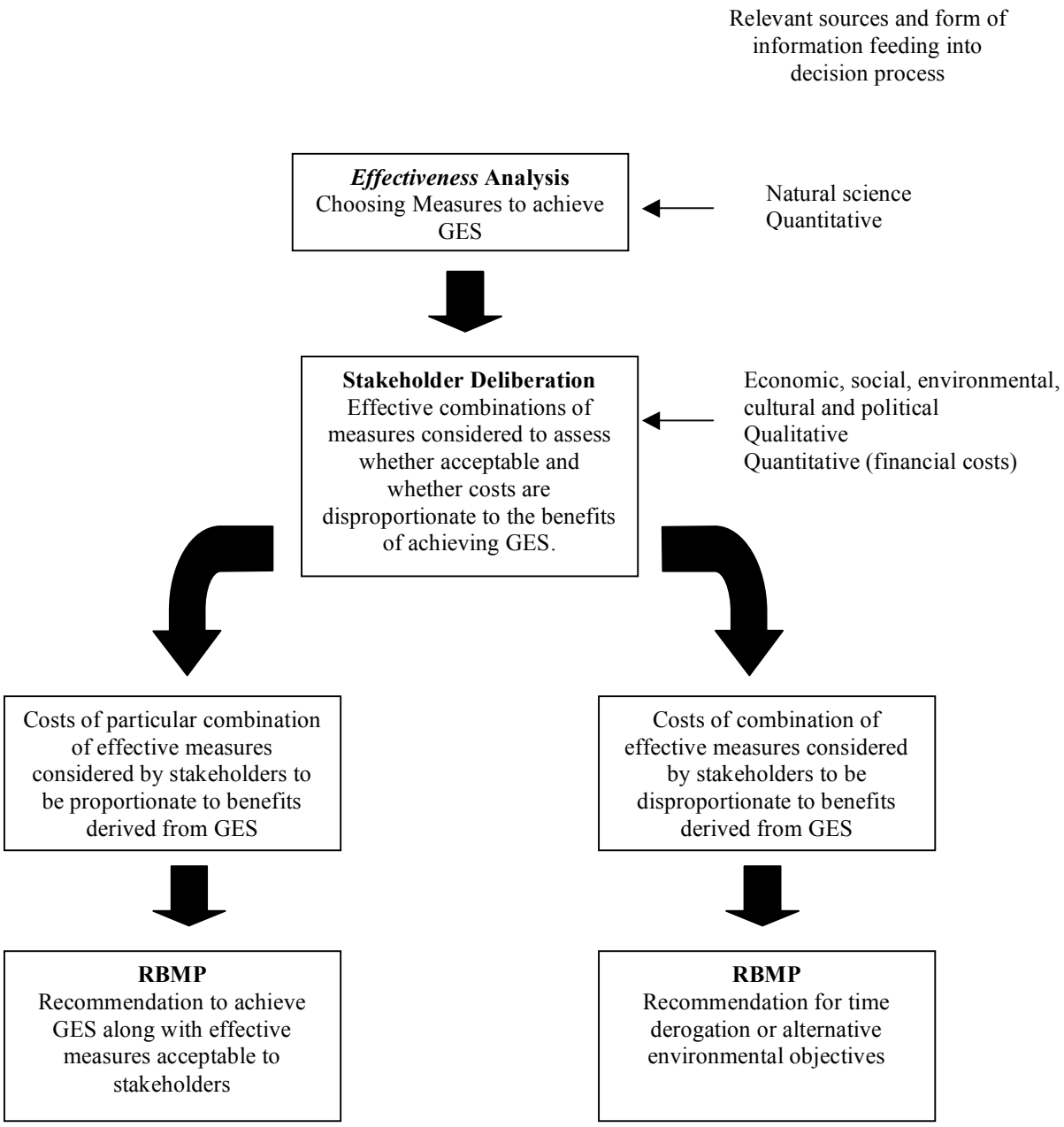

Figure 3. *An Alternative Stakeholder Participation Decision-Making Process for the Development of River Basin Management Plans*

5 Conclusion

The WFD is an important piece of legislation, which will provide a framework for the management of Europe's aquatic environment into the foreseeable future. The manner in which the decision-making process is conducted, in particular DCA, will play a central role in determining the eventual quality of European waters. The two main conclusions of this study are that the level of public participation advocated by the WATECO guidance document and the AquaMoney project fails to involve stakeholders *actively* in the decision-making process. The second conclusion is that the use of monetary valuation for decision-making, such as CV and benefit transfer, will result in the limited effectiveness of the Directive and the implementation of less stringent environmental objectives.

Ultimately, someone will have to pay to achieve GES but the question is who? Will it be the farmers, the water companies, the consumer? River basin management is characterised by many competing uses for what is an increasingly scarce resource, thus there will be winners and losers in final decisions. Informing and consulting with stakeholders *after* a policy decision has been taken, which puts the costs of achieving GES at their door, arrived at through a theoretically flawed closed economic process, which misrepresents or discards ethical views and disguises the inherent conflicts in environmental decisions by not providing a forum, which allows stakeholders to argue their case whilst hearing the arguments of others seems like a potentially inflammatory way of goal setting in the WFD.
According to the first page of the WFD legislative text (2000/60/EC),

> *"Water is not a commercial product like any other but, rather, a heritage, which must be protected, defended and treated as such."*

It has been argued here that a neoclassical approach to decision-making can only treat water as a commercial product due to its foundation in utilitarianism and its narrow concept of value as exchange. To remain true to this central positional statement and to facilitate greater acceptability, transparency and effectiveness of implementation of the Directive, the decision-making process and DCA should not be operationalised by neoclassical methods but should rather encompass a true participatory process, which acknowledges the political nature of decision-making for the environment.

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